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example and the profession of taking in pilgrims. They made no difficulty in answering my questions about the country. To obviate curiosity or suspicion, I had an abstract of Arab genealogies, and always began my questionings with, "You men of Harb, on what lineage do ye pride yourselves?" Notes must be kept private, and sketches must never be seen; but these people do not object to a learned man writing in a MS., as if commenting upon it, and for other purposes he may retire into solitude and pray. The best pretext for avoiding company is "*sauda*"—a melancholic temperament—all Orientals, especially the Arabs, being subject to fits of nervous depression, when they fly to solitude as to a friend. Without some such excuse a traveller would be overwhelmed with society: his hosts will eat with him, drink, smoke, talk, pray, and rather than leave him alone, sleep with him.

My next communication, if you desire it, will be my Itinerary from El Medina to Mecca.\* Once more offering my best excuses for the delay in forwarding this paper,

I have the honour to be, Sir,

Your most obedient servant,

RICHARD F. BURTON,

*Lieut. Bombay Army.*

*Dr. Norton Shaw, Sec. R. G. S.*

## VI.—*Notice on the Variation of the Magnetic Needle at Aden.*

By Capt. S. B. HAINES, I.N.

Communicated by the EAST INDIA COMPANY.

Read April 10, 1854.

IN my letter of January 8, 1852, relative to the probability of a change in the magnetic variation, I then gave proof that, between the year 1800 and my observations in 1834, a change of  $3^{\circ} 47' 30''$  had taken place; and that experiments might prove a still further change, rendering it necessary that it should be ascertained, so that due allowance might be made for it by navigators.

I have now the honour to report that, having had a very superior 10-inch theodolite lent to me, in addition to my own, I have taken, during September and October, many observations in order to ascertain the change of variation at Aden since I surveyed it in 1834; and beg to submit the results to Government, as they prove that my opinion last year was correct, and that since 1834 the variation has diminished westerly  $2^{\circ} 12' 40''$ , being in

\* Since received.—Ed.

October, 1853, only  $2^{\circ} 49' 20''$  westerly. The following are the results :—

September Observation.				October Observation.			
Westerly Variation.				Westerly Variation.			
Obs., 5 means, Azimuths...	$2^{\circ}$	58'	0"	Variations, West...	$2^{\circ}$	43'	0"
Amplitude ..	2	48	4	Azimuths .....	2	48	3
Obs., 3 means, Azimuths...	2	53	0	Amplitude .....	2	51	0
Amplitude ..	2	45	6	Azimuths .....	2	45	0
" "	2	50	0	Amplitude .....	2	54	0
" "	2	52	10				
" "	2	47	10				
" "	2	46	0				

*Means of 27 Observations.*

Means of 27 observations with a most beautiful instrument, with Col. Everest's improvements, in September and October, 1853, at Aden .....	} $2^{\circ} 49' 20''$ Westerly variation.
Means of 130 observations during the survey of Aden in 1834.....	
	} 5 2 0 Westerly.

Variation diminished in 19 years.... 2 12 40

This difference of variation is also proved by taking the true and magnetic bearing to fixed points; the "means" of numerous magnetic bearings to different fixed points now differing from the magnetic bearing on the survey  $2^{\circ} 12'$ , while the *true bearings* all agree.

The variation having diminished  $2^{\circ} 12' 40''$  westerly at Aden, renders it almost certain that a still greater change (even, I imagine,  $\frac{1}{4}$  of a point) has taken place in the N. part of the Red Sea since the survey; which  $\frac{1}{4}$  of a point, during a long and dark night, with steam-rate at 10 knots, will place a steamer 6 or 7 nautical miles from her supposed position; and might cause, particularly if assisted with a slight current, incalculable mischief. My anxiety for the public good has prompted me to make these observations, and I do not hesitate to say I am confident they are correct.

It is also probable that the variation has changed during the last twenty or thirty years along the African, Arabian, Persian, Beloochistan, and Indian coasts; which, however, is not of such vital importance to the navigator as while navigating at a *rapid* steam-rate between the narrow limits of Red Sea dangers.

It may be observed that steamers can ascertain the variation by observation; but, from long and tried experience, I assert such observations cannot be trusted sufficiently for Red Sea navigation. Azimuth compasses cannot be pointed to a nicety, and all vessels have more or less local attraction, which is not always sufficiently attended to.

I would respectfully suggest that the change of variation at Aden be made public as soon as possible.